AMENDMENTS TO THE SPECIFICATION

Paragraph beginning at page 1, line 1 (before the Title):

~~DESCRIPTION~~

Please insert the following paragraph on page 1 after the title:

CROSS REFERENCE TO RELATED APPLICATIONS

The present application is a national stage of PCT/JP2004/005780, filed April 22, 2004, which claims priority to Japanese application No. 2003-193133, filed July 7, 2003.

Paragraph beginning at page 1, line 4:

~~Technical~~ Field of Invention

Paragraph beginning at page 1, line 5:

The present invention relates to an acoustooptic filter in which an interdigital electrode for exciting a surface wave is formed on an acoustooptic filter substrate having an optical waveguide ~~formed thereat~~, and, more particularly, to an acoustooptic filter having ~~in which~~ a mutual action area where light and a surface acoustic wave act upon each other ~~is improved~~.

Paragraph beginning at page 1, line 9:

In recent years, for example, the widespread use of the Internet and the sudden increase in the number of in-company LANs have caused a rapid increase in data traffic. Therefore, the use of optical communication systems which can perform communications at high capacity have become ~~in~~ widespread ~~use~~, not only for data traffic, but also even for access traffic. In order to perform optical communications at high capacities, optical transmission is ~~speeded~~ sped up and optical wavelength division multiplexing is achieved. A light wavelength filter is available as an important component for realizing wavelength division multiplexing.

Paragraph beginning at page 2, line 18:

A light wavelength filter shown in Fig. 14 is disclosed in Japanese Unexamined Patent Application Publication No. 11-84331. In a light wavelength filter 121, an optical waveguide 123 and an IDT 124 are formed at a substrate 122. By changing the birefringence of the optical waveguide 123 in a mutual action area where a surface wave excited at the IDT 124 and light guided to the optical waveguide 123 act upon each other, a birefringence distribution generated in the light wavelength filter 121 is compensated, thereby making it possible to restrict an increase in a side lobe in a frequency characteristic.

Paragraph beginning at page 3, line 10:

The light wavelength filters disclosed in the aforementioned "Low Drive-Power Integrated Acoustooptic Filter On X-cut Y-propagating $LiNbO_3$," IEEEPHOTONICS TECHNOLOGY LETTERS, Vol. 3, No. 10, 1991, and the aforementioned "$LiNbO_3$ Tunable Wavelength Filter Using Acoustooptic Effect" (Year 200 Commemoration of Advanced Technology Symposium, "Piezoelectric Materials and Acoustic Wave Devices," February, 2000) both have narrow-band filter characteristics. Therefore, the light wavelength filters disclosed in the aforementioned "Low Drive-Power Integrated Acoustooptic Filter On X-cut Y-propagating $LiNbO_3$," IEEEPHOTONICS TECHNOLOGY LETTERS, Vol. 3, No. 10, 1991, and the aforementioned "$LiNbO_3$ Tunable Wavelength Filter Using Acoustooptic Effect" (Year 200 Commemoration of Advanced Technology Symposium, "Piezoelectric Materials and Acoustic Wave Devices," February, 2000) are not filters having flat wavelength transmission characteristics over a broad band, and as a result of which, they are not filters that are required in, for example, CWDM.

Paragraph beginning at page 4, line 9:

More specifically, a wavelength transmission characteristic (indicated by a solid line X in Fig. 15) when a phase condition in the mutual action area is constant becomes a characteristic indicated by a broken line [[L]] Y shown in Fig. 15 when the band of this filter is widened by a factor of 10.

Paragraph beginning at page 5, line 1:

Summary of the ~~Disclosure of~~ Invention

Paragraph beginning at page 5, line 6:

The present invention provides an acoustooptic filter comprising an acoustooptic substrate having an optical waveguide disposed [[at]] on a principal surface, an interdigital electrode disposed on the acoustooptic substrate and exciting a surface acoustic wave for converting a mode of light guided in the optical waveguide, with a surface wave waveguide for the surface wave excited by the interdigital electrode extending in substantially the same direction as the optical waveguide and the mode of the light guided to the optical waveguide being converted by the surface acoustic wave, and phase match condition changing means for changing a phase match condition at a mutual action area by 0.235% or more from a state in which phases are matched, the mutual action area being an area where the surface acoustic wave and the light guided to the optical waveguide act upon each other.

Paragraph beginning at page 10, line 12:

Detailed Description of ~~Best Mode for Carrying Out~~ the Invention

Paragraph beginning at page 10, line 13:

The present invention will ~~hereunder~~ hereafter be described with reference to ~~by describing~~ embodiments of the present invention shown in ~~with reference to~~ the drawings.

Paragraph beginning at page 10, line 19:

An optical waveguide 3 is centrally formed in a widthwise-direction ~~central portion of~~ on an upper surface 2a of the piezoelectric substrate 1 so as to extend longitudinally. The optical waveguide 3 is formed by thermally diffusing Ti. In the embodiment, the optical waveguide 3 is formed in an area having a width of 90 nm at the central portion of the upper surface 2a of the piezoelectric substrate 2 by thermally diffusing Ti for 8 hours at a temperature of 1040°C. The optical waveguide 3 is formed over the entire longitudinal-direction length [[at]] of the upper surface 2a of the piezoelectric substrate 2. The length of the piezoelectric substrate 2 is 60 mm, and its width is 5 mm.

Paragraph beginning at page 12, line 3:

The acoustooptic filter is a device which performs conversion between ~~a light~~ TE mode light and ~~a light~~ TM mode light. When the wavelength of light is λ, the propagation coefficients of the TE mode and the TM mode are βa and βb, the effective refractive indices are Na and Nb, and the phase speed of a surface acoustic wave is λ, the phase match condition is represented by the following Formula (1):

Paragraph beginning at page 13, line 22:

Even if the bandwidth is increased as mentioned above, the larger the bandwidth, the larger [[is]] the effect of reducing the input electrical power. In addition, increasing the mutual action area length can further reduce the input electrical power.

Paragraph beginning at page 15, line 1:

In the acoustooptic filter 1, the phase match condition is changed by increasing the thickness of the thin-film ridge 5 from the end 5a towards the end 5b. However, as shown in Fig. 5, the width of a thin-film ridge 15 may be increased from an end 15a towards an end 15b. In this modification shown in Fig. 5, the thin-film ridge 15

of an acoustooptic filter 11 has a length of 30 mm and a film thickness of 1.5 μm. The width at the end 15a is 20 μm, and the width at the end 15b is 40 μm. The other structural features of [[an]] the acoustooptic filter 11 are the same as those of the acoustooptic filter 1.

Paragraph beginning at page 21, line 5:

~~Industrial Applicability~~